GRUMMAN plane news

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Unveil TACRV, high-speed, air-cushioned vehicle of future

With many dignitaries on hand—especially Secretary of the Department of Transportation John Volpe—Grumman took the wraps off Tracked Air Cushion Research Vehicle (TACRV) on Tuesday morning, April 11, at Plant 4 in Bethpage.

The revolutionary vehicle is to be on display at TRANSPO '72 at Dulles International Airport in Washington, D.C., from May 27 to June 4. Then it will go to the High Speed Ground Test Center at Pueblo, Colo., to undergo testing. The tests are to last for about a year and a half.

Usher in new era

In his remarks, Secretary Volpe said that "As we work to solve today's transportation problems, we cannot lose sight of tomorrow's needs. This research vehicle will usher in a new era in high-speeed ground transportation.

"'The TACRV we see here today is capable of great speed. But more than that, it holds a promise of greater passenger safety and comfort while preserving the environment it passes through."

And Secretary Volpe concluded, "Our goal of a balanced transportation system must also include a call for balance between man and his environment. I feel confident that with this vehicle we are on the right track."

After a brief review of Grumman transportation product lines — including aircraft, the Lunar Module, OAO, and so on—President Bill Zarkowsky remarked that "Transportation, whether on the ground, on the sea, under the sea, in the air, or in outer space, is the lifeblood of the Grumman Corporation. Our advanced systems group is presently adding to our array of vehicles the designs for carrier onboard delivery and quiet experimental short take-off and landing aircraft, airport people-mover cars, and other advanced concepts of conveyances."

He went on to say, the TACRV will literally fly on a cushion of air along the ground at speeds as high as 300 miles an hour. "We applaud the logically-paced TACRV development program that has been implemented by the Department of Transportation. We believe that the magnitude of the problems facing the development of true high-speed ground transportation, particularly through congested areas, will demand the best efforts of government and industry working closely in an orderly and well coordinated program.

Pioneering effort

"We are proud to be associated with this country's pioneering effort in high-speed ground transportation. . . . " he said. "We believe that the development of high-speed ground transportation systems requires the innovative thinking and the management techniques for which the aerospace industry is uniquely qualified. The Tracked Air Cushion Research Vehicle that is being presented here today is a very visible tribute to the vision, initiative, and efforts of Secretary Volpe and his associates in the Department of Transportation."

All aboard. Well, maybe not yet, but John Volpe (L), Secretary of the Department of Transportation, and President Bill Zarkowsky get set to board new high-speed vehicle for preliminary inspection.

Tests of this 51-foot 300-mph research vehicle will aim at gathering the technical data required for the design of passenger-carrying systems. Areas of testing will include air cushions, vehicle aerodynamics, ride comfort, linear induction motors (LIM), and high speed electric power collection from the wayside power source. TACRV can be operated on a concrete guideway either elevated above road traffic or at ground level.

The guideway at the Test Center where TACRV will operate will be, when completed, an oval of approximately 22 miles. The Office of High Speed Ground Transportation estimates that the complete guideway will not be finished for another three years. One half mile of it is to be done by mid-July, two miles in October.

TACRV skims on a thin layer of air in a U-shaped channel, propelled by an

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Ride of the future. A gleaming Tracked Air Cushion Research Vehicle was unveiled for officials from the Department of Transportation, representatives from local governments, and the news media last Tuesday, April 11, at Plant 4 in Bethpage. Welcoming the guests, President Bill Zarkowsky said that Grumman is 'proud to be associated with this country's pioneering effort in high-speed ground transportation.' (Photos by Carl Lassig)

Apollo 16 astronauts set for moon launch Sunday

CAPE KENNEDY, FLA.—Three men are to be there, encased in the giant that is Apollo, the thunder bird that will punch a hole in space that will open the way to the moon.

Just the day after tomorrow, Sunday, April 16, the ground around the Kennedy Space Center in Florida will tremble as the roaring, fiery-tailed Saturn booster thrusts its way skyward. This is scheduled to take place at 12:54 p.m. EST (Eastern Standard Time).

At 3:41 p.m. EST April 20, two astronauts, Mission Commander John Young and Lunar Module (LM) Pilot Charlie Duke Jr., are to land their LM (dubbed Orion) on the moon. They are to stay there for three days.

The trio's 12-day space journey is to end with splashdown in the Pacific at 3:30 p.m. April 28. There, a bit north of Christmas Island, the aircraft carrier USS Ticonderoga and other vessels and helicopters will be ready to recover the crew and the spent Command Service Module (CSM).

At the ready

Wiley Williams, director of Operations for Grumman at the Cape, says that ". . . countdown activities have progressed exceptionally smoothly. The in-flight consumables, i.e., water, oxygen, gaseous helium, and supercritical helium, have been loaded aboard the LM. . . .

"All of the lunar experiments have been stowed aboard the LM with the exception of the cosmic ray detector. It is scheduled for installation at T minus 14:30 hours in the countdown. The major tasks to be performed prior to launch include . . . final cabin close-out and installation of the crew ingress/egress platform."

Williams went on to say that "At T minus 28 hours in the countdown, the final cabin switch and valve setting will be performed. Then, the Grumman and NASA crew provisions people will stow the final provisions aboard the LM. . . .

"By T minus 12 hours," says Williams, "the LM and SLA (Spacecraft LM Adapter) will be closed and the MSS (Mobile Service Structure) readied for rollback to the park site."

The man in charge of Grumman's effort at the Cape, Chuck Kroupa, comments that "We are looking forward to a successful launch and mission for Apollo 16. Our team at KSC and our counterparts in Bethpage have done a highly commendable job in preparing LM-11 for this mission. We feel that we have a spacecraft that is ready for the mission.

"As launch day approaches, our morale and attitude continue to be excellent. Once again, we reach another climax of our Company's effort on the LM Program. The day after liftoff, we will start preparing LM-12 for the Apollo 17 mission. I am confident that this shall be another good spacecraft."

To go back to April 20, when Orion is to set down in the relatively smooth highlands area named Descartes for the famous French mathematician and philosopher (1596-1650), Young and Duke are not expected to dash off immediately to the first of three seven-hour EVAs (Extra-Vehicular Activities). Rather, in view of evidence drawn from earlier EVAs, the two men will be allowed to rest before stepping down the LM ladder to perform their first EVA.

Extremes of evolution

Why have the LM land in the Descartes area? The prime reason is scientific. It is believed that the area represents two extremes, the oldest and the newest rocks. Rocks in some craters are judged to be several billion years old. But most craters, it is hypothesized, were formed only a few million years ago as a result of objects from space hitting the moon. For geologists, this presents a field day—an opportunity to "measure" the relative ages of lunar materials. And there is another interesting study, one that dates back some 350 years when Galileo looked through his telescope and detected craters on the moon. The craters, he thought, were caused by volcanoes; today's hypothesis is that most craters were formed by impacts, a few by volcanic activity.

To collect samples of the "old" and the "new" rocks and crater materials is therefore one of the key missions of the astronauts. Of great significance in this crater-to-crater investigation will be the presence, once again, of the Lunar Roving Vehicle (LRV), which proved its value in the Apollo 15 mission.

For the past part, the first EVA will be dominated by setting up the nuclear-powered automatic scientific station—the Apollo Lunar Surface Experiment Package (ALSEP) — that is to return scientific data to the earth for many months for correlation with data still flowing in from the Apollo 12, 14, and 15 ALSEPs.

Moon samples

As before, sampling lunar rocks and soil, gathering it all for return to earth, and describing their finds in detail, will constitute the bulk of the work by Young and Duke. There are some new experiments, though — quite typical of Apollo travelogs. One is a cosmic ray detector experiment. It is designed to help scientists find out the nature of these rays, which are large-energy high-velocity particles that come from outside our solar system. So far, we know very, very little about them.

New, too, is a far ultraviolet camera-spectograph. The film in the UV camera is highly sensitive to electrons and is 10- to-20 times faster than typical film. Also, it's insensitive to visible light—important because the earth is about one thousand times brighter when viewed with visible light than when viewed with UV. And the optical image is exactly duplicated by an electron image and permits a unique analysis of the chemical elements in the original light source.

Many experiments

As Young and Duke carry out a multitude of moon-borne activities—heat-flow, passive seismic, active seismic, solar wind, soil mechanics, lunar geology, lunar surface magnetometer, and so on—an astronaut in the CSM, Tom Mattingly, will be exceedingly busy as he orbits the moon time and time again. He will operate experiments in the Scientific Instruments Module (SIM) bay for measuring such things as the lunar surface chemical composition, and the composition of the lunar atmosphere.

A high-resolution camera and a mapping camera in the SIM bay will add to the imagery and photogrammetry gathered by similar cameras used on the Apollo 15 mission. Mattingly will also perform an in-flight EVA during transearth coast to retrieve film cassettes from these cameras. Total time in lunar orbit—during which SIM experiments and photography can be done—is roughly six days. However, not one of the experiments can be operated for all of that time. As a rule of thumb, 60 hours per experiment could be the upper limit.

Out of all of this activity will come a look at our galaxy, uninhibited by

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Prepping. The LM-11 Orion crew, Charlie Duke (L) and John Young are on the way to the training area to simulate a lunar traverse, or walk. When it's for real on April 20, 21, and 22, they'll be exploring the mountainous region near the crater Descartes, collecting surface material, making geological observations, and deploying the fourth geophysical station on the moon. (NASA photo)

Apollo 16 mission schedule

Event	Time from liftoff	Day	EST
Launch	0.00	4-16	12:54 p.m.
Earth orbit insertion	0.12	4-16	1:06 p.m.
Translunar injection	2.33	4-16	3:27 p.m.
Lunar orbit insertion	74.29	4-19	3:23 p.m.
Descent orbit insertion	78.36	4-19	7:30 p.m.
Spacecraft separation	96.14	4-20	1:08 a.m.
Lunar landing	98.47	4-20	3:41 p.m.
EVA 1	102.25	4-20	7:19 p.m.
EVA 2	124.50	4-21	5:44 p.m.
EVA 3	148.25	4-22	5:19 p.m.
Lunar liftoff	171.45	4-23	4:39 p.m.
Spacecraft docking	173.40	4-23	6:34 p.m.
Trans earth injection	222.21	4-25	7:15 p.m.
Trans earth EVA	242.00	4-26	2:54 p.m.
Splashdown	290.36	4-28	3:30 p.m.

Research team to hunt new clues during investigation of moon soil

Samples of the lunar materials retrieved from the moon's surface by the Apollo astronauts will soon undergo an extensive investigation by a Grumman Research teeam. The researchers anticipate that an exhaustive scientific inquiry, using a new Research developed nuclear technique, will result in new information on the development of the sun and the moon.

The samples will be small, "probably no bigger than a quarter," according to Dr. Gerald Padawer, who heads the team, "but they will have various concentrations of hydrogen, helium, and other light elements within a thin layer just below their surfaces; these concentrations will provide clues as to the history of bombardment of the rocks by solar winds and solar flares."

The principal analytical tool that Grumman will use in this investigation is a "nuclear microprobe technique" developed by Padawer for measuring the depth distribution of amounts of light elements, such as hydrogen, helium, lithium, carbon, etc., implanted in material surfaces. The information derived will be extremely valuable in helping scientists understand the evolutionary processes that have occurred on the moon's surface, as well as in providing heretofore unavailable data about some of the energetic particles that leave the sun and collide with the moon.

Powerful technique

This powerful diagnostic technique has already been used, at Grumman, to get profile data on concentrations of lithium, carbon, fluorine, and aluminum in aerospace component materials. Most recently, it has been used to measure the profile of hydrogen in titanium specimens, making it possible for materials technologists to study better the problem of dangerous hydrogen embrittlement of metals.

Research's three-million-volt Van de Graaff accelerator is an important piece of equipment used in the microprobe technique. Portions of the work also will have to be done at an outside accelerator facility. Basically, the samples will be bombarded with "fast ions" from the accelerators. This causes nuclear reaction "signatures" that can be measured with other instrumentation, thus revealing the "profiles" of the light elements in the surface of the rocks.

"A comparison of data obtained from a surface rock from, say, Hadley Rille, with a sample of bedrock from the bottom of the Hadley Base core will hopefully reveal differences between modern and ancient (perhaps 4½ billion years) formation processes," Padawer has stated. "The distribution of, say, hydrogen around the surfaces of a given lunar rock can yield information on how the rock has changed position, and can thus reflect on the history of lunar surface erosion."

Grumman's selection as a lunar sample investigator came as a result of a proposal submitted to NASA wherein examination of specimens with the nuclear microprobe technique was offered as a new method for better understanding of lunar evolution. Padawer, of the Nuclear and Astrophysics Section, is principal investigator. His co-investigators are Dr. Werner Brandt, Professor of Physics, and Dr. Davis Young, Professor of Geology, both of New York University; Mike D'Agostino, head of the Nuclear and Radiation Sciences Group, Plant 26, and Drs. Mike Stauber and Ed Schneid, of the Nuclear and Astrophysics Section.

Core samples, too

Grumman is one of the few industrial companies in the country to get lunar samples from NASA; all other rocks brought back from the moon have been retained by NASA or entrusted to universities and scientific bodies. The team expects to receive not only samples of surface materials, but samples of the cores that astronauts drilled out from beneath the lunar surface "dust."

The investigation is expected to begin in about two months and last for a year, with possibilities of extension beyond the original contract.

Rock choice. Samples of lunar rock were being chosen from NASA catalog by Grumman Research team for nuclear microprobe investigation. Collaborators are (L to R) Dr. Mike Stauber, Dr. Ed Schneid, Dr. Gerald Padawer, and Mike D'Agostino. (Photo by Bob Settles)

Select Keith Stein as Skylab finalist

Keith Stein, 14-ear-old son of Don Stein of the Avionics Shuttle staff in Plant 25, was one of 25 finalists in the Skylab Student Project conducted by the National Science Teachers Association and NASA. A "limited number" of these experiments will be chosen by NASA for space flight aboard the earth orbital Skylab manned space station in 1973.

The proposals by the 25 finalists were chosen from 3,409 submitted by U.S. secondary school students all over the country and overseas.

Keith's suggested experiment was entitled, "Effects of Intermittent Long-duration Exposure to Zero and Artificial Gravity." The description: "To determine the effect of long-duration exposure to zero and various levels of gravity, interspersed with entry, earth, and launch accelerations, on the survivability, growth and development of algae, daphnia, and other microorganisms. Also to investigate the effect of gravity on enzyme action."

The Steins live in Westbury and Keith is a sophomore at W. Tresper Clarke High School there. He's top man in his class, and he wants to be a surgeon.

The 25 student finalists and their teacher-sponsors will attend the Skylab Student Education Conference at Kennedy Space Center when the Skylab is launched.

More on Apollo . . .

(Continued from page 2)

the earth's atmosphere, and sharper maps of both the face of the moon and back, dark side of it.

Of course, the beginning of all this must wait until the day after tomorrow. As Plane News went to press, the countdown was proceeding in its customary, methodical way—with the usual "meticulous attention to detail," as Grumman's base manager at the Cape, Chuck Kroupa, might phrase it.

GAA plans vacation flights

A charter flight by Pan American 707 to the Canary Islands is being planned by the Grumman Athletic Association for September 14-24 at a cost of $325 per person, double occupancy. Six vacation days will be required. Tour members wil lstay at the Don Juan, in the center of Las Palmas.

GAA will accept reservations Tuesday, April 18, at 5:30 p.m. in the Plant 28 waiting room. Names will be drawn to determine order of sign-up, and full payment of the $325 will be required. For further information call GAA, Plant 28B, Ext. 2133 or 2269.

Interested in the London-Frankfurt flight scheduled by GAA for May 26 - June 17? At present it is filled, but replacements may be needed to fill any emergency cancellations that may occur between now and May 26. Cost is $180 round trip. Call GAA, Ext. 2269 or 2133.

Remington, Collins get A-6 posts

Vice President Ross Mickey, director of Aircraft Programs, recently announced the appointment of Pete Remington as deputy director for A-6 Production Programs, and Dan Collins as deputy director for A-6 Development Programs. They report to Bill Trillo, A-6 Program director.

Remington and Collins are in Plant 34C and may be reached on Exts. 7020 and 9661, respectively.

Plan display for volunteers

Grumman Health Systems plans to have an open house for employees who are active in voluntary organizations (fire depts., ambulance services, auxiliary police, hospital auxiliary, health organizations/foundations: cancer, cerebral palsy, heart, etc.) in order to inform them of the Health Care Systems, Instrumentation, and Services developed by Grumman. These products include Female Cancer Detection Mobile Unit, Emergency Rescue Vehicle, Handicapped Transport, Operating Room Control Console, and others. If interested, fill out coupon below and indicate affiliations.

Upon receiving coupon below, Grumman Health Systems will invite you to a presentation of products, to be held in early May.

Grumman Health Systems

Name .....

Dept. ..... Plant ..... Ext. .....

Organization name (in full) .....

Your affiliation .....

Organization name (in full) .....

Your affiliation .....

Clip and send this by interplant mail to Grumman Health Systems, Plant 41, by April 21.

Make last call for applicants for Masters Fellow Program

The deadline is approaching for those engineers who want to take part in Grumman's Masters Fellowship Program. **This year something new has been added: men and women can nominate themselves rather than depending on their supervisors to nominate them.** The Program is open to promising design engineers in the Company who can qualify for admission to a Masters program at a local college.

If a person is selected by the Masters Fellowship Recommendation Committee to participate in the two-year program, Grumman Aerospace pays all the education costs for a Masters Fellow: tuition, books, and fees, and gives him two days a week off for studies and homework when school is in session. A Fellow receives an annual stipend of $1,000 plus $500 for each dependent, plus regular rate of pay for the time he actually works at his Grumman job.

Self-nomination okay

Since the Program began in 1968, the first step in admission has been a supervisor's nomination. Now for the first time, design engineers are invited to apply directly. If you are interested, call George Breen, Program supervisor, at Ext. 86315, and ask for a brochure and an application form. This form must be returned to Breen by May 1.

To qualify, you must be working in an engineering area, must be able to meet requirements for entry to a Master's program in a local college, and must be design oriented.

"If you are qualified, you will be called for an interview before the end of May," Breen said. "The Committee will want to know if you have the design skill and the determination necessary to make this investment mutually beneficial to you and the Company. The goal, naturally, is to increase individual design skills and through them, our competitiveness in the industry. The committee selects four areas of the Company where each Fellow will work for six months.

"Work assignments are chosen to give each Fellow the stepping stones the Committee feels a person needs to perfect his or her design skill," Breen continued. "In addition, each Fellow will have a personal adviser to make sure he never has to 'go it alone'."

Last year, 13 people—eight from Grumman and five from colleges—were selected to participate.

Dick Cyphers, section head of Structural Systems, is chairman of the Recommendation Committee for the Masters Fellowship Program. The other members are Dick Imgram, technical assistant to the manager of Electrical & Electronic Engineering; Dick Scheuing, deputy director of Research; Dick Mazourek, assistant director, Proposals & Advanced Projects, Flight Acceptance; Ray Doll, chief engineer, Product Support Department; Don Spetta, Product Manufacturing Administration.

For details call Breen on Ext. 86315.

Change in stock voting

Members of the Grumman Employee Investment Plan should be aware of a change in the voting of the shares of Grumman common stock, held for them by the Plan, at the Grumman Shareholders annual meeting to be held May 16, 1972. All members of the Investment Plan have the right to instruct Bankers Trust Company, the Trustee, how they wish to have their shares voted. Formerly Bankers Trust Company had the right to vote Plan shares, if not instructed by the Plan members. Now the Trustee can no longer vote in that situation. "No instruction; no vote," says Corporate Secretary Larry Rockwell.

Each member of the Grumman Employee Investment Plan will be receiving a blue card in the mail, at home, headed "Confidential Voting Instructions to Bankers Trust Company." On this he may instruct Bankers Trust to vote as he wishes them to vote. If he does not so instruct, or does not return the card in time, his shares simply will not be voted by the Trustee.

The cards, with return postage-paid envelope, will be sent out on or about April 13. They should be returned by May 9, 1972.

Research car draws interest in visit to Bethpage

It was something like "this is the house that Jack built" — only the "house" was an electric car, attracting attention wherever it went. It had been a winner in Worcester Polytechnic Institute's 1970 Clean Air Car Race, and its creators, Chris William and Dave Lyons, had got permission to drive it to Grumman on a demonstration trip.

A little overwhelming were the questions fired at the two boys, sophomores at WPI. Their explanation went something like "the Jeep V-6 engine drives the alternator that charges the batteries that power an electric motor that powers the car." Some probing about how successful the anti-pollution devices are drew frank admission that there was room for improvement. Fumes were emanating from the gas engine "and we're trying to find out if they can be fed into the exhaust."

The body of the car is a Gremlin that was given to them, said to cruise at 60 mph. The Jeep V-6 engine drives the alternator. No clutch, no gearbox, no transmission. "All propulsion is from the electric motor."

Chris (far right) is majoring in electrical engineering at WPI. He was a 1970 finalist in the Grumman Engineering Scholarships for high school students. Dave is a classmate who helped to develop the car. They're using a shipboard alternator "but what we really need is an aircraft alternator." (Photos by Bob Settles)

Cite dollar savings in waste recycling

It makes good business sense to recycle metal waste, and it helps the ecology, too. In today's world of upward spiraling costs, we can't afford to throw anything away that may have reclamation value. Proper segregation of scrap metal at its source is one of the best ways to reduce costs, according to Charlie Gemuendt, manager of Property Disposal.

Scrap metal that is properly segregated will bring higher prices on the market. This means a higher dollar return to Grumman, and, in a sense, to all of us.

Here's how you can help:

- Segregate metal, whether it be aluminum, titanium or stainless steel, etc., **at the source.**
- Label all scrap bins to show type of metal to be deposited.
- Locate scrap bins near punch presses, metal saws, or other metal working machines.
- Make sure that all scrap metal is placed in proper bins and not in garbage cans.

If you have any problems or need further information, call Bernie Smith, Industrial Conservation, Ext. 1495.

Remember: "source segregate" wherever possible!

CALENDAR of events

Notice of events for period Apr. 28 - May 12 should reach Plane News by Tues., May 2.

Ama. Radio Club: Wed., Apr. 19, 5 p.m., WA2LQO radio shack on roof of Plant 5, field day plan, Radio sta. WA2LQO is open every Wed. eve. from 5 p.m. on. E. Goodman, Ext. 87125.

Amer. Prod. & Invent. Ctrl. Soc.: Tues., Apr. 18, 6:30 p.m., Holiday Inn, Plainview. Morris Pollack on "Fundamentals of Prod. Plan." Norm Heilweil, Ext. 7011.

Chess Club: Tues., 5 p.m., Plt. 3 cafe, tournament, games. Alex Ikonnikow, Ext. 7592.

Coin Club: Every Wed., 12:05 p.m., Plt. 25 Vend. Conf. Rms. Ken Hale, Ext. 3395.

Duplicate Bridge Club: Every Thurs., 5:45 p.m., Plant 3 cafe. S. Stone, Ext. 3652.

Family Campers: Fri., Sat., Sun., Apr. 21 thru 23, Smith Pt. Pk., 1st campout of the season. Bill Lord, Ext. 2914.

Fenc. Club: Mon., 5-7 p.m., Plt. 30 cafe, Instr. in fenc./competition. A. Chomas, Ext. 1926.

Fly. Club: Fri., Apr. 14, 5 p.m., Plt. 28 audit., reg. mtg. Stan Kalemaris, Ext. 7341.

L.I. Nurses Assoc.: Thurs., Apr. 20, 8:15 p.m., Plt. 28 audit. Spkr. Mrs. Annette Fisher, chairman Dist. 4 Legis. Committee of N.Y.S. Nurses Assoc. Mary Gise, Ext. 3723.

Old Friends Club: Tues., Apr. 25, Plt. 28 Rm. 2, cold and hot dishes, spr. dance tkts. avail. F. Mistretta, Ext. 2683.

Retiree Club: Wed., Apr. 26, 1:30 p.m., Holiday Manor, reg. mo. mtg. GAA, Ext. 2133.

Soccer Club: Wed., 5 p.m., practice, Grumman Plt. 3 field; Sat., May 13, West Point. Karl Herrnkind, Ext. 3470.

Stamp Club: First 3 Wed. of mo., 5 p.m., Plt. 30 cafe, swap, circuit bks., sales, auctions, discussion. Marty Harow, Ext. 9171.

Set exhibit dates for Garden Forum

The first Grumman flower show, featuring spring flowers, will be held on Thursday, May 11, in Plant 30 Cafeteria. Kay Zuk of Employee Services continues as head of the Grumman Garden Forum, and Frank Vernon will be the manager of the show. Marie Catalano has been named assistant manager.

The Rose Show, with Gus Preiser as manager, is scheduled for June 15.

There will be special novice classes in the show this year, Kay Zuk said, and she urges retirees to participate. First-place prizes will be provided by GAA, and the Employee Services Office will issue gift certifiates to be used in the Flight Shop.

Record turnout at C. U. meeting helps to spur key changes

"We hope to have a capacity turnout," said Credit Union President Tom Gill in announcing a startlingly new approach to the Credit Union annual meeting this year.

His "hope" was fulfilled beyond all expectation. Without a doubt it was the biggest crowd that ever attended a Bethpage Aircraft Federal Credit Union annual meeting. Attendance in previous years had lagged, and this year the directors "thought big"—they invited all CU shareholders to attend the annual meeting on March 23 and to stay on for a complimentary dinner and door prizes. The acceptances poured in. The location had to be changed from Holiday Manor to the much larger Huntington Town House, and 2,500 shareholders participated with the greatest enthusiasm.

"We've been getting good feedback from the members who attended. We think it generated a lot of interest in some aspects of the Credit Union not ordinarily understood," said Tom Gill afterward. Gil, who is assistant real estate manager for Montauk Aero Corporation, a subsidiary of Grumman Corporation, is president of the Board of Directors of the Credit Union and one of the directors elected at the March 23 meeting.

Lunchtime business. In the Bethpage Aircraft Federal Credit Union building near Plant 2, CU directors meet to conduct a business that soars into the millions. Headed by President Tom Gill (L), the Credit Union Board is comprised of (clockwise) Miles Jacobson, Joe Milillo, John Kost, John Fessel, Ray Montano, Cecil Davis, George Hennings, and Bob Giles. They serve without pay. (Photos by John Boles)

Elect directors

Five directors were elected for two-year terms: Gill, Cecil Davis, Bob Giles, John Fessel, and George Hennings. Continuing on the Board are Ray Montano, Miles Jacobson, John Kost, and Joe Milillo. On March 24 the Board met and elected officers for 1972: Gill, president, Kost, vice president, and John Fessel, secretary-treasurer.

Credit Committee members re-elected for two years are Art Westerfeld and Bernie Smith. Jim Roberts continues on the committee. Charlie Buxton, Howard Dunn, and Bob Freese are on the Supervisory Committee, and Hennings, Gill, Milillo, and Kost comprise the Executive Committee. The members of the board and committees serve on their own time and without compensation. John Fessel is also manager of the Credit Union.

The scope of the Bethpage Aircraft Federal Credit Union can be seen from the Statement of Condition, which shows a growth in assets from $22 million to $27 million in the year ended December 31, 1971.

A continuation of the 6% dividend was declared for the first quarter of 1972. This is the highest rate allowed by the National Credit Union Administration. It is compounded quarterly, from the first of the month, on deposits received by the 10th of the month.

A number of changes have been introduced during the year in the interest of efficiency of operation and service to shareholders. In July the Credit Union swung over to a Grumman Data Systems on-line computer system that greatly streamlines every transaction. Instant information, instant updating take place at the cashier's window, expediting withdrawals, deposits, and loan applications. With the new computer, posting is done immediately instead of being delayed as much as a week.

Distribute message

The CU president's message, a copy of which was distributed to each shareholder, pointed out that the Credit Union had had a record income of $2,158,217.78, an increase of $261,546.03, or 13.7% over the previous year, in spite of a decrease in membership (from 26,000 to 24,000). The dividend rate was maintained at 6%.

The Student Loan program has been active, with $239,000 loaned out during

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BETHPAGE AIRCRAFT FEDERAL CREDIT UNION

Statement of Condition

ASSETS	1971	1970
Cash on Hand and in Bank	$ 330,317.11	$ 931,534.03
Investments:		
Repurchase Agreements (NBNA)	900,000.00	—
Government Agencies	13,796,729.31	9,691,412.50
Loans to Our Members	11,745,253.14	11,389,423.77
Accrued Interest on Government Securities	271,707.73	256,970.94
Furniture, Fixtures & Leasehold Improvements	10,676.80	12,989.35
Other Assets	4,606.39	14,723.14
TOTAL ASSETS	$27,059,290.48	$22,297,053.73
LIABILITIES		
Accounts Payable	$ 1,960.60	$ 5,383.15
Accrued Liabilities	53,050.00	37,674.89
Pension Fund-Liability for Prior Services	21,756.00	25,382.00
Deferred Credits	3,089.00	11,158.00
TOTAL LIABILITIES	$ 79,855.60	$ 79,598.04
MEMBERS' EQUITY		
Members' Savings	$23,652,683.72	$19,349,219.83
Legal Reserve	1,354,299.60	1,454,685.10
Reserve for Contingencies	400,000.00	400,000.00
Undivided Earnings (Before 4th Quarter Dividend)	1,572,451.56	1,013,550.76
TOTAL MEMBERS' EQUITY	$26,979,434.88	$22,217,455.69
TOTAL LIABILITIES AND MEMBERS' EQUITY	$27,059,290.48	$22,297,053.73

Space Shuttle team at work —

they labor all through the day, long into the night

Quite early in the morning, often shortly after sunrise, Plant 25 is alive, throbbing with activity, as people order and discuss the elements of the day's tasks. The give and take of problem-solving has been well under way before the mass stream of traffic surges into the Bethpage facility.

Throughout the morning and afternoon hours, the intensity of action doesn't moderate; rather it seems to peak, to peak again, and to peak yet again.

Few seem to notice the cloak of approaching darkness. The motion carries on into the night for many at the plant, and for many who pick up the chore again at night at home. And curiously, if there is fatigue it seems not to slow the step of these men and women who have united in a common effort, to win the Space Shuttle Program.

The tone is positive, pervasive, potent: Grumman must win, it will win. If faith can move a mountain, then faith in tandem with expertise can move a chain of mountains.

For those who doubt it, live in Plant 25 for just a day . . . or for that matter, in any area in Grumman building for the Shuttle win. People at work takes on a new dimension!

Spirit to create

Part of the spirit lies in the challenge itself—to create something new to the world, a space transportation capability that will (in the words of the National Aeronautics and Space Administration) "reduce substantially the cost of space operations, and . . . provide a future capability designed to support a wide range of scientific, defense, and commercial uses."

The program will be headed by a single prime contractor, in both the developmental and operational stages, and it is that top post that Grumman is after.

NASA has set down firm guidelines affecting the proposal. Nine separate volumes are to be submitted and the combined total of pages cannot exceed 1,700. This tight packaging, and the need for innovative concepts, probably make this the most challenging program effort in history. And clearly, "the heat is on."

Job organization

In over-simplified terms, the job breaks down into six categories: engineering, tooling, manufacturing, testing, quality control, and "other," which means whatever's left. Each of these six areas is in turn subdivided, dealing very specifically with such matters as design, development, operations, manpower, scheduling, and so on. At the same time, as Volume VIII manager Gray Smith puts it, "Each package has to be a thoroughly yet briefly and accurately defined unit; and each must interface with the others and play harmoniously with all. At the end there must be a fully integrated 'game plan' that shows what's to be done when and how and where and by whom. It must show NASA that each job will be accomplished on time and within costs."

Part of the task of coming up with a winning proposal, too, is not only defining key areas in words but also in illustrations and models, such as a visible structure of Cape Kennedy's Vehicle Assembly Building (VAB).

Thus Al Trabold and his group in Support Systems, for instance, are deriving all of the requirements for ground support operations, including personnel, ground support equipment, training and trainers, spares, publications, handling and transport, maintenance, consumables, and so on. The people with Ed Offenhartz are tackling the formidable TPS (Thermal Protection System) task. As Ed says, "We're talking of the largest manned spacecraft ever flown, one that is to land in 'normal' aircraft style. We have to protect that Shuttle from extreme temperatures, and the physical area is much larger, it will fly longer than any spaceship before, and—of critical importance—it must be reusable. We have to be certain that that first manned orbital flight will be safe, reliable, and reusable. We know what the problem is, what we need to do, and we're going to do it. The route is well planned."

In a closely related area, Thermal Environment and Control, Andy Mendelsohn and his group (like others) are drawing from the rich experience of the Lunar Module, the Orbiting Astronomical Observatory, and a long line of Grumman aircraft. "We've been at it for more than two and a half years, we know there's no precedence—previous spacecraft have been blunt in shape and have no wings, tails, and fuselages —and we know we have a fine data base. Some of our tests (with models) have been outstanding, and we've been told so, largely because we have the premier model shop in the country. We're able to predict the environment as a result of our analyses."

Determine parameters

Again in a closely allied field, that of aerodynamics, Pete Hellsten's group has been determining the external shape of the Shuttle in order to satisfy atmospheric environment performance, for example, take-off, landing, flying qualities, etc., by performing many low-speed and high-speed wind tunnel tests. "We've finished our preliminary analytical studies. We're sure our conceptual approach is valid. Like the F-14 or any new craft, testing has to be done to refine our data, but that's quite normal."

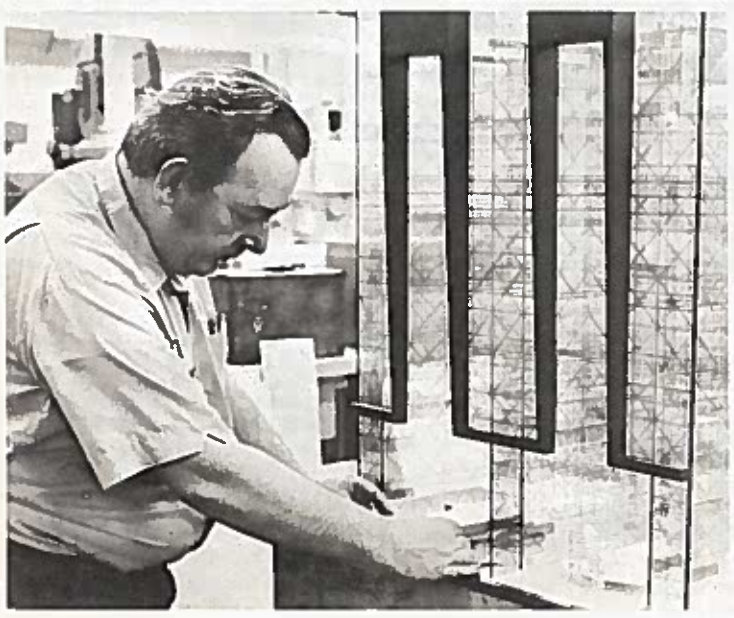
Hellsten also points out that his group is responsible for separation of various elements of the Shuttle, such as the Booster from the second stage, and the Orbiter from the tank and Booster in case of abort conditions.

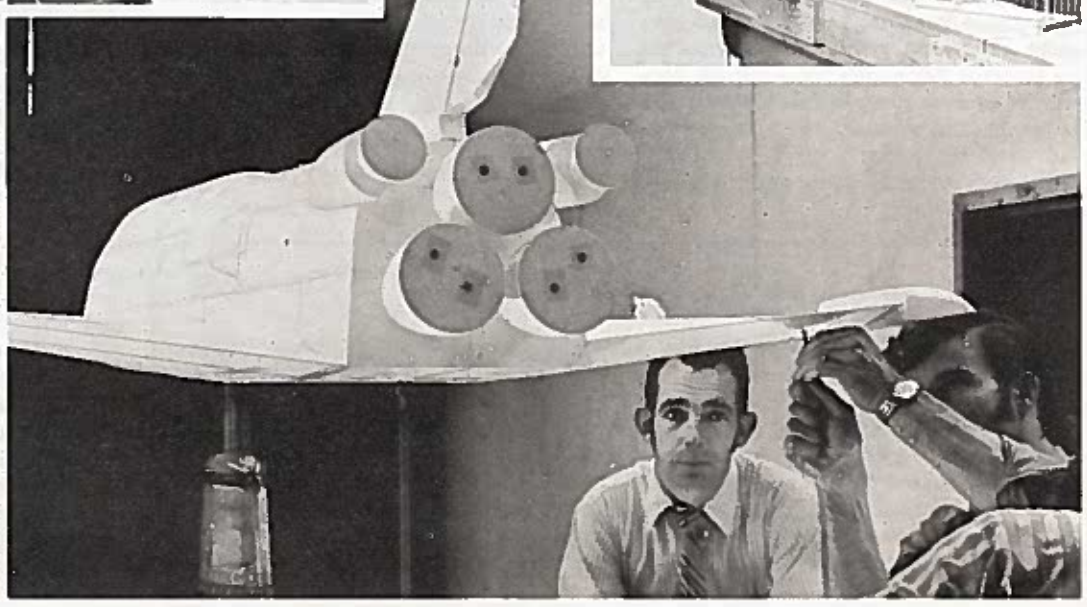
Take another area, say, Structural Systems. There Ira Victer's group is concerned primarily with the issue of building a Shuttle "that will fly for ten years. It must be maintainable, hold up under fatigue and corrosion, be reliable. And that's just the beginning for us; for example, we have to define the outside lines. Like everybody else in this place, we have to relate to the stress group, to manufacturing, to the thermal people. . . ."

Where the action is

Add to that a very significant point, that Plant 25 may be the focal point of action but much activity is in progress elsewhere (including field sites), and one begins to comprehend the magnitude of the personnel, technical, interface, and management problems involved. That's why people are scurrying all over the place, why updating sessions are frequent and numerous, why new ideas are always in the hopper, why individual excellence is a must, why visibility is mandatory, why the pace of action is always on the rise, why "normal" working hours is a phrase without meaning right now.

"After we win the Shuttle," says Fred Raymes, director of the proposal effort, "we can relax a bit." He smiles and quickly adds, "For a few minutes. . . ." getting ready for the Source Evaluation Board's visit.





Photos by
Jim Wagner

Calabria hits record game with 279 in Hawkeye Mixed play

Charlie Calabria wrote "finish" to a lot of things a couple of weeks ago in the Hawkeye Mixed loop, among them the hopes of four other guys to at least grab a share of the high game record in the league. Phil Barton, Tony Klobukowski, Chet Everoski, and Vince Crevoiserat all reached 246 this season, but after Calabria threw a record-breaking 279, they were out of the running for high game laurels. When Charlie also added 207, he finished with a 643 total — and that knocked Tom Murtha and his 637 out of contention for league honors, too.

Other highlights: J. Jezewski, 229-208-622; Ernie Neves, 214-585; Andy Michalowski, 220-213-587; Nick Bilogan, 202-588; L. Newcombe, 204-502; H. Murtha, 500. . . . Aerospace gleanings included: Gordon Bell, 233-212-636; Tom O'Connor, 214-604 and 216-599; George Ulrich, 222-204-604; and Dave Evans, 213-598. . . . **Rocket** results: Tom Reilly, 211-591; Paul Havekotte, 204-566; Tony Caputi, 222-567; Charlie Stumpf, 211-562; Fred Gregory, 204-577; John Cortese, 204-229, 564. . . . In the **Woodbury Mixed:** Dan Seip, 221-557, Ken Camidge, 215-544; Donna Lawrow, 501; Betsy Reuper, 470.

Hellcat marks fall

Both individual marks fell in the Hellcat loop in recent action. Jack Nielsen reached 658 on games of 246 and 215, to smash the series mark, while Grover Hart set a game record with 259. He finished at 603. Other highlights included Ed Raab's 231-602, Al Gennerilli's 209-590, Art Lih's 224-589, and Bill McKinnon, 220-572. . . . Lone Star scores from the **Friendship league:** Dick Nelson, 221-619; Larry Langan, 238-613; Walt Kowalski, 584; Tom Izzo, 555; Pete Coniglio, 549. . . . **Century Mixed** standouts: Nancy Gentzlinger, 232-541; Bill Kallansrude, 202-523; Ruth Finno, 497.

In the **Trader** listings were: Tom Wright, 209-575; Sal Sclafani, 227-570; Ken Smith, 226-568; Jim Rose, 238-567; Herb Squire, 215-564. . . . Tallies from the **Syosset Mixed:** Monica Wojtyniak, 201-535; Sue Degnan, 200-496; John Betterino, 212-587; Ed Miron, 201-566; Bill Diercks, 201-560; Pat Ogilvie, 221-523; Rita Mathia, 512. . . . From **Patchogue Mixed:** Maggie Gaynor, 599 (a record); Val Lindstrom, 512; Gene Burgess, 224-601; Bob Menrisky, 218-579; Marty Van Essendelft, 207-561; Dave Struller, 206-555; Norma Landin, 495. . . . **Nite Owl** gleanings: Marty Susa, 200, 245; John Bruscino, 220; Rudy Dunkley, 218; Earl Schroeder, 223; Ralph Laurino, 218.

Although Jack Diana fired 230-215-643 in Classic play, it didn't quite make a league mark, nor did Dick DiDonato's 237 in the same round. . . . **Masters** highlights included: Ike Washington, 259-797; Jerry White, 201-208-795; Bob Ogilvie, 212-774; Don Eivers, 200-762. . . . **Red** high spots: Milt Guttenberger, 231-602; John LaPorta, 210-203-579; Joe Glasser, 213-575; Bob Nielsen, 209-225-604; John Cabbe, 563.

Brunner hits 623

Tom Brunner helped the **Hookers** maintain a slight edge over the Mustangs in the Classified league sttandings recently as he fired 204-223-623 to head the individual scoring. Other highlights over the past three weeks were: Bob Dudonis, 201-227-600; Hank Burkhardt, 200-574; Art Mahlstedt, 200-244-599; Ross Chandler, 201-201-589; Bob Hoehn, 202-584; Farly Lockhardt, 221-592; Scotty Wigley, 200-204-590; Mike Mustapich, 216-581. . . . **Black** league pin spillers included: Carmine Vitale, 225-200-607; Steve Haras, 223-202-597; Walt Becher, 206-205-578; Art Grey, 246-570; Jim Herzberg, 203-570.

Report on Credit Union . . .

(Continued from page 5)

the year, Fessel said. A maximum of $1,500 per academic year may be borrowed by the son or daughter of a Credit Union member for purposes of higher education. If the adjusted annual income of student and parents is less than $15,000, then the Federal government will pay the interest in full while the student is in school. The student has the responsibility for repaying the loan within a year after he completes his course of study or leaves school. Such loans are Federally insured.

To keep CU money "working," investments are made in various government securities. Since 1971 members' savings have been insured by the National Credit Union Administration up to $20,000 on each account.

Loans available

Loans to members are granted according to length of employment, indebtedness, and income. Said Fessel, "We have 10,039 loans outstanding, amounting to $13,302,000. The 10.2% true annual rate of interest is perhaps the lowest available rate in this area. The interest is charged at the rate of .85% per month on the unpaid loan balance. Passbook loans are also available at a lower rate of interest. We carry a maximum of $5,000 life insurance on all CU borrowers at no cost to them."

In the question period that followed the formal business meeting, members asked about the possibility of insuring the lives of depositors, of insuring borrowers against disability, of borrowing for home improvement for a longer period than the current three-year limit. These were reported to be under consideration.

To a question of whether interest charged on loans might be reduced or partially refunded at the end of the year, the answer was that this was a very real possibility and was under consideration. (Both this and depositor life insurance have since been activated by the directors.)

One questioner wanted to know if there had been competitive bidding for the on-line computer system that has been negotiated with Grumman Data Systems and he was told that six companies were invited to bid but only GDS responded. According to Tom Gill, its use since summer has proved that is can save a subtantial amount of money for the Credit Union and provide much improved service.

A questioner probing the use of undivided earnings was told that they protect the 6% dividend and that, until lately, accounts were not insured and the undivided earnings level constituted a necessary protection.

The independent CPA firm of Hurdman and Cranstoun, Penney & Company regularly audits the Credit Union books, and the Credit Union is also subject to surprise audits by Federal examiners.

Gill said that a new brochure describing in detail the benefits the Bethpage Aircraft Federal Credit Union offers is being prepared and will be issued in the summer.

Ann Wuestman, assistant treasurer of the Credit Union, drew names from a revolving drum for the door prizes. The recipients were, for $100 Savings Bonds: Edward Rudinsky, Ralph Benedict, and Tom Emma; $50 bonds: Dave Hershowitz and George Perry; $25 bonds: Randy Sablich and Ernest Chombok.

Credit Union refund

The Board of Directors of the Bethpage Aircraft Federal Credit Union announced a 10 percent refund of interest charged on all loans for the first quarter ending March 31, 1972. This interest refund will be credited to the borrower's share account in early April and will appear on the second quarter statement which the borrower will receive shortly after June 30.

The Board of Directors also announced that all depositors will soon be covered by share life insurance. There will be no charge to the depositor for this additional benefit. A detailed explanation of the life insurance coverage will be mailed to all members in the near future.

Tourney runners-up. Nick Malandro, Ben Plawski, Dave Evans, and Bob Kohlhoff dropped to second in the L.I. Industrial men's bowling tourney, in the final round when a late surge carried A.M.F. to the title. Missing are Ernie Jenkins and Fred Skirde. (Photo by Bob Settles)

Boehm paces pistol win with 277

Phil Boehm fired 277 and teammate Ron Trenker scored 270, Nick Evangelides, 267, and Hank Chau, 262, as the Grumman P squad registered a 1,076-1,022 victory over Brookhaven Lab in the L.I. Industrial pistol league. The win raised their mark to 5-6 in the .22 caliber expert division.

Despite Dave Rice's 278, the As lost to Sperry, 1,065-1,095.

In the sharpshooter division, the Cs saw their undefeated record shattered as the Grumman B squad, led by Bill Boyce's 257 and Ray Nordmark's 255, scored a 997-993 win. The Bs now hold a 10-1 mark in the sharpshooter competition, and the Cs are at 9-1.

It's all over for the season for the E team—and it ended on a bitter note, an 878-947 loss to Pan Am. Nat Spencer's 237 was high for the losers.

Things didn't go any better for the Grumman team in the South Shore league. In center-fire competition, Al Berka hit 280, Dave Rice 267, and John Crawford 264 but the Gunners Club led at the finish, 1,082-1,069.

Skirde pin star

Fred Skirde hit 268 and 202 to finish with 667 while leading Grumman to victory in the Pan Am mixed tourney two weeks ago. The mixed tourney features the top two men and women bowlers from 14 industrial squads.

Nick Malandro scored 220-600, Chin Thompson, 536, and Bella Miglio, 510, to aid the Grumman title win.

Women's practice

Practice for the women's softball squad has been underway for about a week now, but more tryout sessions have been scheduled for Tuesday, April 18, and Wednesday, April 19, at the Plant 1 softball field starting at 5 p.m.

Big assist. Vice President Tom Rozzi (L) was on hand to help Marge Pani of Plant 34 and GAA head Bob Benn draw lucky prize winners in GAA membership drive. Others gathered around were those who contributed 'special help' during the campaign. (Photo by Marie Trimborn)

GAA hits record percentage in '72 membership campaign

It was over—at least until next year—and the GAA membership drive was the most successful ever conducted. "Over 85 percent of all Grummanites participated in the 1972 campaign," said Mike Cherry of GAA. "We beat our record of last year and we couldn't have done it without you." Now, with the drive over, he was talking to some of the key people who had helped make the drive a success; they were gathered at Plant 28B for the drawing for 15 Polaroid color cameras and 50 sets of Grumman glasses.

Vice President Tom Rozzi was on hand to offer his congratulations and to get the drawing started. He did, picking the first prize winning ticket belonging to Edward Raulsome. After that some of the others on hand joined in and picked the rest of the winners. There were 65 in all.

Better next year?

When the last ticket was pulled, Mike Cherry thanked everyone and added that, while he was delighted with the results, he was still hoping to hit the 100% mark, someday. "Maybe next year we'll do it. If anyone has any idea of how we can do it, please let us know."

The 15 lucky recipients of the Polaroid color Land Cameras offered by GAA in the drive are:

PLANT 1: Sal Camerlengo; Thomas Hroncich
PLANT 2: Joseph Mattera; Eugene Albertson
PLANT 3: William J. Vogel; Mack Sheppard
PLANT 4: Walter Kozak
PLANT 7: Neil Branigan
PLANT 30: Bob Freese; Frances Hall
PLANT 33: Edward Raulsome
PLANT 34: Jack Herman
PLANT 35: Rosemarie Cillis
PLANT 40: Richard Baril
PLANT 77: Dennis C. Nelson

More winners

Winners of Grumman glasses were:

PLANT 1: Harold Feeney; George Herrel
PLANT 2: Adam Wolynski; Anthony Cipriani; Charles Kipp; Tom Slouck; Peter Wladyka
PLANT 5: Francis Kozak; Sophia Leloudis; Allen Sipos; Edgar Lewis; John F. Hehir; Mary Dugan
PLANT 6: Phil Gribbons; Greg Stilwagen
PLANT 7: Edward Blohm; Peter Folio
PLANT 11: John Szymanski; Bob Safar
PLANT 12: Albert Schleimer
PLANT 15: Fred Loo; Lois Johnson; Bernard Yudin; Roland F. Winter
PLANT 17: Lee Daw; Dolores Daggett
PLANT 18: Gus Nielsen
PLANT 25: John Razzini; Calvin Zepp; Wilfred Crispin; Joseph Cagnazzi
PLANT 27: Joseph Graham
PLANT 30: Mark Siegel; Irving Watman; Louis Agiesta; Henry Auwarter; Walter Jankowski
PLANT 34: Walter Wells; John Malesko
PLANT 35: Elliott Luce; Benedict Pandak; Frank Marciniak; Edward Lee; Jay Mendelsohn
PLANT 36: Walter Lengwenus; John Galletta
PLANT 40: Herman Fischer; Gracie Hull
PLANT 77: Alice Hudgins; Donato Pescitelli

Late tourney surge by A.M.F. drops men's varsity to second

What happened to the Grumman varsity in the final round of the L.I. Industrial men's bowling tournament could be summed up in two words: Tony Savoia. Tony anchors the A.M.F. squad. Going into the fourth round, with Grumman leading by 17 pins, Tony shot 151, came back with a spectacular 289, followed that with 201, and wound up the night with 641.

A.M.F. burst past Grumman and Pan Am in the second game of the three game set by registering the tourney's high game of 1,072 and proceeded to amass 3,029—another 1972 tourney high—for the night. A. M. F. won the team title with a 11,507 total, with Grumman second at 11,361. Rounding out the top five in the 16-team field were: Pan Am, 11,275; Airborne, 11,171; and Aerospace, 11,088.

On the strength of his 289—he rolled 10 straight strikes and left a four-pin on his second ball in the 10th frame, Savoia collected the high game award. He was the Outstanding Bowler with a 2,445 total for 24 games, and also earned second-high game with 265.

Ben Plawski hit 204-208-599 in the finale and finished second in the Outstanding Bowler competition with 2,426—a 202 average.

Scura rallies to take third billiards title

Something happened to Cosmo Scura on the way to his third successive pocket billiards tourney title—he got beaten. Fortunately for Scura, however, it was in the semi-finals. It gave him another chance—and you should never give that to Scura—to come out of the losers' bracket and try again.

Scura's second encounter with George Massey—he had lost the first, 100-70—was much more successful for the defending champ. He won it, 100-26. The second, and final, win over Massey came after. This time it was closer, probably too close for comfort for Scura. The score: 100-96. Massey came in second in the 17-man field, the same spot he finised last year. George has also won the title twice.

Hinds wins one, too

Jeff Hinds earned the top spot in the handicap division of the pocket billiards tournament by topping Ken Lango in the final playoff match, 100-93, 97-100, 100-98. Couldn't be much closer.

In all, there were 21 entrants in the competition, each with a designated handicap as a result of play in the pocket billiards league.

Women grab lead in bowling classic

Although the scoring was on the low side, the Grumman women's varsity held a 24-pin edge after the first four games in the L.I. Industrial tournament for women. Chin Thompson led the contingent with 675, with Peg Sheridan at 203-656; Bella Miglio, 647; and Bertha Siegl, 614.

Grumman finished the first round with 2,592 for the four-game set, while Nassau County Civil Service Employees were at 2,568, Republic, 2,501, and Pan American at 2,446.

The 14 teams in the women's field will return to action this Saturday, April 15, at Mid Isle Lanes in Hempstead, and conclude their tournament next week, April 22. Competition begins at 7:30 p.m.

The Grumman women have dominated the tourney over the past decade, at one time running off six straight.

Calling low-handicap swingers for varsity golf team tryouts

The annual 54-hole golf trek to decide the makeup of the Grumman varsity tee team is set to begin on Monday, May 15, at Bethpage State Park. Only Grumman golfers with handicaps of 10 or less are eligible to enter the tryouts. Handicaps must have been established in 1971 over regulation layouts, and all league or club handicaps should be included on the entry form.

Varsity berths will go to the eight low medal players in the three 18-hole rounds. After the second round, set for May 17, the field will be sliced to the 16 low scorers, with the varsity eight determined on total scoring for the 54 holes, which ends on May 22. Play will be held on the Red and Black courses at Bethpage.

Entry forms should be forwarded to Mike Cherry at the GAA office, Plant 28B, by May 3.

The Grumman varsity, perennial champion of the L.I. Industrial circuit, will be seeking its eighth straight team title in that play.

Varsity golf tryouts

Entry blank

Name ..... Perm. No. .....

Dept. ..... Plant ..... Ext. .....

Club or league	Course	Handicap
.....	.....	.....
.....	.....	.....

Submit to GAA, Plant 28B by May 3

at your SERVICE

This is a free service to Grumman personnel for non-commercial advertisements, accepted on a first-come, first-served basis. Classified advertisements are carried in PLANE NEWS only on the basis that everyone replying to such advertising will receive fair and equal consideration regardless of their race, creed, color, or national origin.
Type or print ad on form available at Employees Service and Engineering counters, and send via interplant mail to PLANE NEWS, Plant 5, Bethpage. List home phone (with area code if outside Nassau or Suffolk). Limit: one ad per person per issue. No item under $10, no firearms or ammunition.

For Rent

APT.: Bethpage, 2½ rm., pvt. ent., gent. pref., $160/mo., security. 931-1384.

APT.: Bayport, 3½ rm., unfurn., terr., aid cond., upstairs, avail. for sublease 4/1 thru 10/31, may be renewed. 665-2921, after 5:30 p.m.

COTTAGE: Loon Lake, Adirondacks Mt., pvt. bch., boats, sport equip., etc., $60-$80/wk. 212 268-6536.

ROOMS: 2 furn., bath, Massapequa. MY 4-1223, after 4 p.m.

ROOM: W. Farmingdale, lrg. cedar closet, nr. plts. CH 9-2873.

HOUSE: Middle Island, 2 bdrm., bus. couple pref., or w/1 child, $185/mo. 732-9074, after 5 p.m.

CAMPER TRLR.: Hdtp., slps. 7, foam matt., gas range, sink, refrig., dinette. HA 7-7344.

HOUSE: Poconos, 2 bdrm., din. rm., lrg. lake across rd., use of boats, pools, & bch. LI 1-5177, after 6 p.m.

ROOM: Massapequa Pk., furn., pvt. ent. LI 1-5602.

COTTAGE: Rocky Point, 2 bdrm., lrg. scrn. porch, nr. pvt. bch., avail. wk. or mo. basis. 757-2684.

APT.: Lake Ronkonkoma, 3 rm., pvt. ent., bus. couple only. JU 5-6020, after 8 p.m.

ROOMS: 2, bath, cook. facil., util. incl., pvt. ent., nr. Grumman. 212 729-2218.

Wanted

ENG.: Outbd., approx. 20 hp. MO 9-6291.

SLIDE TRAYS: For Argus electromatic proj. 234-8310.

MISC.: Air compressor & tank w/ 1 hp elec. motor; used bldg. mat'l., cement blocks, plywood, shingles, etc. 924-5093.

SHOP MANUAL: '66 Plymouth. LT 9-6837.

FL. JACK: Hyd., 1.5 tons cap. 589-5235.

MOBILE HOME: & or space, sale or rent, W. Ctrl. Suffolk area, mature man. 581-0403, after 4:30 p.m.

HOUSE: Stuart, Fla. or vic., 2 or 3 bdrm., gar. or carport. (516) CH 9-1023.

STAMP COLL.: U. S., sgls. and/or plate blocks. 864-2380.

TENT: 2 man lite wgt. nylon. OV 1-2126, after 5 p.m.

HOUSEMATES: To share summer house Fire Isl., Ocean Bay Pk., Memorial Day to Labor wk. GE 7-5069, bet. 6-7 p.m.

TRAINS: Lionel, any z., access. 598-3834.

APT.: Or sma. house, Nassau County, 3 or 4 rm., approx. 6/1 or 7/1. 938-3943.

FLUTE: Gd. cond., reason. 588-6267.

FL. WAXER: 17 in. commercial, gd. cond., reason. 589-8171.

DOG: Fem., West Highland, wh., for breeding. OV 1-2126, after 5 p.m.

ROOMMATE: To share house in Bethpage, $75/mo. PY 6-0197.

LOBSTER POTS: 585-7628, after 6 p.m.

STOCK MUFF.: For '66 Honda CB-160, lug. rack for CB-160. PY 8-4258.

Ride Wanted

LINDENHURST: To Plt. 5, 7:48-4:18 p.m. or car pool. TU 4-8301.

For Adoption

KITTENS: 3 grey, 1 blk. Charles Guarneri, Ext. 86618.

Car Pool

FAR ROCKAWAY: 5 Towns area to Plt. 15, or ride 1-2 times. 212 337-6869, evgs.

For Sale

MISC.: Dbl. bd. w/box spr. & matt., maple uphol. rocker & chest of dwrs., $125. 585-1125, after 6 p.m.

TBLS.: Lea. tops, mahog. step, & bk., both have dwrs., $50/ea. GE 3-4741.

MISC.: Youth bd., $10; desk, $50. WE 1-2567.

HOUSE: Moriches, waterfront, 76x250, 5 yr., 3 bdrm. ranch, 2 full bath, attach. heat. gar., firepl., bch. rgts., $35,000. 878-2262.

BABY CARR.: Biltrite, navy blue, matt., winkbkr., conv. to car bd., $20. 893-0765.

For Sale

BABY FURN.: Childcraft #5290 crib, wh., Nursery Time matt. & bumper, drop sides, used 3 mo., $100. 423-5299.

HAMMOND ORGAN: Cherry col. spinet, 1 yr., $700. CH 9-2225.

MISC.: 26 in. boy's bicycle, $20; camp. stove, $10. 751-0364.

GOLF CLUBS: Wilson K-28, tp. store clubs, 2 to 9 irons, 1, 2, 3, 4, woods, lea. grips, steel shaft, $99. 421-3792.

HOSPITAL BD.: Sears, new, fully motor., make offer. 543-9307.

POOL HEAT.: Gas., 13-15,000 gal. cap., Laar's, 3 yr., 5 yr. guar., $100; Craftsman 3 yr. lawnmower, rotary type, nds. work, best offer. 665-4008.

DRUMS: Slingerland, full set, Avedis Zildian cym., stds., & access., $290. 239-2374.

MISC.: 20 tooth clam rake, new, $30; '66 Honda, low mi., $300. 587-8617.

SURF ROD: 2 pc., 10 ft. Garcia, $25. WE 1-2339.

MISC.: Baseboard steam heat sect., all attach. & cov., lngth. 1, 10 ft. 6 in., 1, 7 ft. 6 in. 2, 6 ft., 8 in., 2, 5 ft. 9 in., best offer. OR 8-4766, after 5 p.m.

LIV. RM. FURN.: 3 pc. contemp. mod., broadloom & runners, access. incl., reason. MO 9-2316.

GERM. SHEP.: Fem., 7 mo., silver & blk., shots, AKC reg., best offer. 747-7942.

VW: '71 grn., 7,800 mi., radio, $1,600. 878-0978.

DODGE: '67 Polara, 4-dr. hdtp., pwr. steer. & bks., $1,025. JU 5-8641.

BUICK: '64 Electra, 4-dr. hdtp., all pwr., air cond., new start., fuel pump & batt., $250. 368-5778.

CORVETTE: '59, 427 c.i., manual shift. torqueflite, low mi. on drive train & bdy., reason. 269-9188.

WAG.: '65 Chevy, 6 cyl., auto., new tires, front end align., & batt., $675. 585-3747.

KARMANN GHIA: '69 VW, auto. stick shift, yel., $1,600. 379-8883, evgs.

KARMANN GHIA: '71 VW, 22,000 mi., std., R&H, w/w, $1,895. 868-7563.

VW: '65, low mi., 6 tires, 2 snows on rims, recent tuneup, grn. ammeter, new batt., xtras, ask. $495. 735-3154.

PONTIAC: '69 GTO, grn./wh. int., blk. vinyl tp., 4-spd., 4 new tires, 8 trk. tape deck, $1,975. 669-0549.

FORD: '70 Torino, 6 cyl., 2-dr., auto., pwr. steer., w/w, 7,000 mi. 473-7707.

MG: '71 Midget, 8,000 mi., stereo tape, $2,200. 473-6906, after 6 p.m.

VW: '66 bus, R&H, rebit. eng. & transm., snows, $995. 785-5331.

MISC.: '68 Ford Galaxie 500 conv., blue, auto., pwr. steer., $1,200; '66 Chevy Bel Air, V-8, 283, auto., pwr. steer., $500. 433-6812.

MINI BIKE: 4 hp Cheeftah, ask. $90. WE 8-5138, after 5:30 p.m.

DODGE: '68 Charger, 383 eng., air cond., pwr. steer. & bks., vinyl roof, drk. grn., blk. int. orig. owner, s/s, bkt. seats, cons., $1,400. PI 6-4830.

CORVETTE: '58 Chevrolet, 2 tps., new paint & tires, orig. cond., nds. 2 dr. panels, $1,150. 293-8796.

PICKUP: '66 Ford Bronco, 4-whl. drive, 6 cyl., new snowplow, grn. & wht., new tires, bks. & batt., $1,450. 249-8284.

SAILBOAT: 18 ft. sloop w/cab., slps. 2, inbd. eng., marine hd., trlr., comp. o'haul. '70, $1,525. 543-0044.

CRUISERS, INC.: 18 ft. lapstrake, 60 hp, 18 gal. tank, Navy tp., curts., moor. curt., full equip., trlr., ask. $750. MO 7-5877.

COUCH: 4 pc. sect., lgt. gold, $95. 378-5612.

ENG.: '62 VW, 40 hp, comp. rebit. & inta., $160. 273-6239.

AUTO PARTS: Corvette 4:11 posi rear, fits '63-'72, $90; Holley 4-bbl./780 CFM, $25; Corvette ring/pinion 3:08, fits '63-'72, $25. 724-4096.

TIRES: New Firestone superbelt, G78-14, (8.25-14) blk. wall, never used, $20. 744-1741.

COUGAR: '68, air cond., auto., pwr. steer., vinyl top, bkts., cons., 31,000 mi., $1,200. 751-3125.

VW: '69 Fastback, radio, auto, w/w, whl. discs, fuel inject., $1,325. 751-3150.

LE MANS: '68, 3-spd., vinyl tp., blue, new batt., clutch, muff., $1,150; 14 ft. fbl. boat, winner Sprite, $375. PY 9-6512.

MGB: '63 conv., metallic blue, blk. tp., & int., 4 new Semperit radial tires, new front bks., $550. 864-2999, after 5 p.m.

TRAVEL.: '67 Shasta, 13 ft. bks., Reese hitch, 3 burner stove w/oven, water tank, 12v/115v, 50 lb. icebox, slps. 6, xtras, $950. 473-7295.

AUTO PARTS: '68 Pontiac GTO conv., less eng. TU 8-3114.

TRLR.: HITCH: Rear axle, for VW bus, $30. 785-5331.

HOUSE: Stony Brook, 1/3 acre, prof. lndscpd. & fenc., 4 bdrm., 2 bath, 2 car gar., all appli., s-s, patio, porch, xtras, $34,000. 751-3230.

HOUSE: Sayville, 7 rm., 35x60 ranch, 2½ car gar. w/elec. dr. open., 24x18 den w/raised terr., all appli., eat-in-kit., fin. bsmt. w/grnd. lvl. ent., ½ wood acre w/trout stream, undergrnd. sprink. sys. w/well, wh. alum. s-s, w-w, 2 zone heat., $39,500. LT 9-1680.

HOUSE: Medford, nr. Exit 64 or LIE, 3 bdrm. split., din. rm., lrg. cath. ceil. liv. rm., panel. fam. rm., gar., oil heat., w-w, s-s, shrubs, $25,000. 289-0179.

HOUSE: Holbrook, 3 bdrm. ranch, fenc., firepl., full bsmt., eat-in-kit., din. rm., ¼ acre, s-s, appli., panel., Sachem dist., $32,000. 588-7184.

DINGHY: 8 ft. w/oars, can take sm. outbd., $125. 757-0345.

BOAT: 17 ft. Winner, fbgl. hull w/40 hp elec. start. Evinrude, full equip., cush., anchor, Navy tp., windshld., batt. 628-1444, after 6 p.m.

BDRM. SET: Wal. Med., 2 end tbls., dbl. bd., 2 dress., 10x11 rug. $400; 2 maple twin bds., $50, both set come w/linens, bd. spreads & matt.; washer, $100. FI 7-0538.

END TBL.: Col. 665-0875, bet. 6-9 p.m.

For Sale

BOAT: 25 ft. Sportfisherman, '60 Ulrichsen, flybridge, pole hold., fish well, cush., hd., 125 hp Chrysler Crown, 3 yr., low hrs., xtras. 587-3877.

SUNFISH: 2 sails, red deck/wh. cockpit, used 3 season, $350 firm. 587-8799.

BOAT: 23 ft. Broadwater cab. w/bunk, stove, sink, tbl., hd., Interceptor eng., xtras, $2,300; '71 mini bike Chibi, $225. MO 9-5919.

OUTBD.: 3.9 hp, '69 Merc., $75; 8 ft. fbgl. Atlantic dink, $125. 264-1893.

MOTOR. BIKE: 2½ hp, twist grip throttle, best offer. GE 3-7706.

HONDA: '71, CL-175, 1,600 mi., elec. start., direct., ask. $595. 941-4604.

MOTORCYCLE: '66 Honda, 50cc, mod. CA-95, blk. & chrome, 9,000 mi., elec. start., $175. JU 8-4076.

MISC.: 4-spd/ M-21, close ratio, $160; 2, G70 15 tires mtd. on Keystone mags, $60; Hurst 3-spd. link. for Chevy, $10; tri-pwr. for big block Chevy, comp., $75; manifold & 500 CFM Holley for BMW 2002, $80. 826-5910.

AUTO PARTS: 1 set, new, Crane Pontiac roller rockers, $95; 1 set Manley pistons 12 to 1, 389.-060, $70; Manley piston 12½ to 1, 327.060, $70. George Zambelas, Ext. 57-628.

SOFA: Blue contemp., reason. 661-4932.

ICE CREAM FREEZER: 4 qt. elec., Sears, $20. 269-6568.

SKI EQUIP.: Blizzard skis, 205cm, Eckel-Casco cable bind., Eckel poles, 55 in. men's Munari lace boots, sz. 10, boot tree, reason. 922-3855, after 5 p.m.

TYPEWRITER: Royal elec., lrg. carr., $100. BA 3-5009, evgs.

SPKR. SYS.: Utah SH8W, 8 in. woofer, mid-range coaxial spkr. & 3½ in. tweeter, 25w, 8 ohms, $65. R. Rapp, Ext. 86665.

TREES: 4 yr. seedlings, Colorado blue spruce, yew, Norway spruce, silver fir, rosa multi-flora. 281-2855.

MISC.: 8 in. Craftsman tbl. saw w/3 type blades, assort. elec. motors; Sears 1/3 hp, G.E. 1/16 hp, B&D 1/15 hp, Wagner 1/8 hp w/mt., reason. 226-9076.

MISC.: 7 in. reel Dokkorer tape record., 3 hrs. dbl., 6 hrs., sgl., Masir, $300; 1 hp deep well water pump, used, $50 or best offer for both. 585-3421.

POODLES: AKC, coca, 7 wk., male & fem., worm. & shots, $100. 888-7949.

MISC.: Poker tbl., fold., grn. felt top, $15; Sears Edger-trimmer, $23. 273-7172.

CHEVROLET: '63, bkt. seats, 6 cyl., 2-dr., $200. 277-1029.

ALPINE: '66 BRG, 48,000 mi., 3 tps., radio, nds. some work, $575. 884-9025.

VW: '70, 4-spd., radio, 28,000 mi., 1 owner, $1,350.

OLDSMOBILE: '60 Dynamic 88, auto., 4-dr. sed., pwr. steer. & bks., safety locks, blue, $100. G. Foray, Ext. 87470.

RAMBLER: '60 American, 4-dr., 6 cyl., auto., $50. ED 4-2983.

VEGA: '72 sed., 2,000 mi., auto., pwr. steer., w/w, $2,150. PY 1-5528.

DODGE: '66 Coronet 500, 318, 2-bbl., pwr. steer. & bks., auto. on cons., Keystone mags, bkt. seats, $400. 667-0128, after 6 p.m.

OLDSMOBILE: '63 F-85 Cutlass, V-8 sport sed., make offer. 333-2751.

STA. WAG.: '68 Falcon Futura, auto., pwr. rear wind., 48,000 mi., $1,300. 265-6370.

STA. WAG.: '64 Malibu, auto., pwr. steer., radio, 43,000 mi., $550. 266-3574.

TRIUMPH: '63 TR-3, B mod., comp. restored, $1,700. 735-4374, after 7 p.m.

PINTO: '71, 2,000 cc eng., 4-spd. trans., brown w/ blk. vinyl tp., w/w, fold down bk. seat, radio, accent group. 543-1085.

BARRACUDA: '66, 283 c.i., 4-spd., vinyl roof, new parts, $600. 567-0797.

DODGE: '70 Dart, 4-dr. cust., 8 cyl., auto., air cond., pwr. steer., rear defog., w/w, stud. snows w/rims, ask. 1,900. 598-0829.

VW: '69 Bug, one owner, $1,050. 671-0517.

CHRYSLER: '67 Newport, 2-dr. hdtp., R&H, pwr. steer. & bks., $750. 671-0517.

VOLVO: '69, 29,300 mi., $1,775. 667-9489.

HYDROPLANE: 14 ft., mahog., 50 hp Mercury outbd., elec. start., trlr., xtras, $500. 981-0123.

OUTBD.: '70 Sportscraft, 16 ft., tri-hull, fbgl., '65, 33 hp elec. Evinrude, Holsclaw trlr. w/winch, fully equip., $1,450. 669-2116.

BOAT: '56, 25 ft. Owens, dbl. plank mahog., Flagship, '69, 150 hp, 6 cyl. Palmer Inter., $1,200 or best offer. 732-9492, after 5 p.m.

SAILBOAT: '67, 32 ft. fbgl. Bristol, slps. 6, alum. mast, mainsail & jib, mahog. int., gimbal stove & oven, 8 ft. dinghy, xtras. 757-2684.

BOAT: '64 MFG, 15 ft., fbgl., nds. some transom work, '57, 35 hp Evinrude, trlr., $175 or best offer. AN 5-9508.

CRUISERS INC.: 18 ft. runabout, refin., comp. equip., '71, 125 hp Evinrude, 12 hrs., $1,900, mgt. sell sep. 676-4378.

RUNABOUT: 7 ft., 40 hp Johnson, all elec., mahog. hull, fbgl. bottom, trlr., xtras, $450. 921-0096.

BOAT: 15 ft. wood, trlr. & access., $175. 585-8359.

SAILBOAT: '70, 12 ft. Aquacat catamaran, fbgl., incl. car tp. carrier & 3 life vests. 643-7588.

MARINE ENG.: 225 hp Gray marine, comp, rebit. last summer, copper risers for sgl. exh. sys., $350. 665-0972.

HOUSE: Dix Hills, sch. dist. 5, 4 bdrm. hi-ranch, blt. in pool, lrg. rec. rm. w/brick firepl., all appli., prof. lndscpd., undergrnd. sprink. sys., xtras, $47,-000. 667-9073.

HOUSE: Stony Book, Strathmore S Buckingham, 3 bdrm., 2 bath, add. playrm., patio, firepl., fence, w-w, slate ent. hall, $33,900. 751-2022.

APT.: Condominium, Howard Bch., 2 bdrm., 2 bath, 18 ft. terrace, w-w, air cond., xtras. 212 835-8790.

For Sale

CAMERA: Polaroid color pk. Land, mod. 320, 268 flash attach., new, 2 pkgs. flash bulbs & inst. bk., $40. 293-7710, after 5 p.m.

CAMERA EQUIP.: Leica mod. .111F, 35mm range finder w/50mm Elmer f3.5 lens, case, $75; Kodak Cavalcade slide proj. w/f2.8 lens, fully auto. w/ remote ctrl., case, 7 trays, $75. 433-4826.

MOVIE CAMERA: New Bauer C Royal, 1.5 lens, 10 zoom, $200. 661-5791.

MISC.: Bauer super 8 movie camera w/case, $75; silver coins, halves, quarters & dimes, best offer. IV 6-3713.

LENS: 200mm f4, FD Canon w/case & hood, new, $130. 212 923-8509.

CAMERA: Olympic 35-SP w/fast f1.7 lens, auto. or manual ctrl., case & warr., $70. 212 923-8509.

PUPPIES: Boston terriers, male, AKC reg., born 2/26, $75 & up. 277-3768.

BOXER: Champ sired, fawn w/mark., male & fem., docked & cropped, gd. health & disp. OV 1-7381.

MISC.: Folk guitar, nylon str., case, $45; 21 in. Setchel Carlson B&W TV, radio/phono, $70; Estey 24 chord organ w/bench, $70; Arnold Palmer golf clubs, 1, 3, & 4 woods, $40. 584-5053.

GUITAR: Gretsch Chet Atkins mod. elec., hollow bdy., hard case incl., $150. MO 9-9119.

PACHYSANDRA: Root. cut., hardy evergreen, field grown. 731-6105.

RHODODENDRONS: Azaleas, etc., reason. RA 8-4914.

BABY FURN.: Lullaby wh. prov. canopy crib & match. dbl. dress., Bilt-rite Pk. Ave. navy blue coach carr., make offer. 669-9022.

AMA. RADIO STA.: Heath HW-16, 50-90w CW transceiver w/spkr., crystals & ant., less than yr., $120. 751-1256.

MISC.: Cameo & pearl wed. band, lrg., $30; Casco del. hair dry. w/manicure attach., $15; Nerelco woman's elec. shaver & manicure set in travel case, $10; adj. window guards w/locks, $10. 928-2743.

HOUSE: Levittown, 3 bdrm. cape, liv./din. rm., new formica kit., cust. firepl., w-w, o'sz. gar., no broker. 796-2766.

OBITUARIES

Plane News has received word that death has come to the Grumman personnel listed below. We extend sincere sympathy to relatives and friends.

HERMAN V. PATTERSON of Food Services, Plant 30, died March 21 at the age of 56. He had been with Grumman since 1965. His home was at 29 Grant St., Hempstead.

HAROLD J. CONRAD died March 25 at the age of 61. He worked in the Machine Shop, Plant 3, and had been with the Company since 1966. His home was at 42 Claflin Blvd., Franklin Square.

BERNARD J. O'NEILL of Alodine, Plant 3, died March 27 at the age of 54. He had been with Grumman nine years. His home was at 88-40 Aubrey Ave., Glendale.

JOHN E. HOLDER of Corporate Security, Plant 28, died April 3. He was 57 years old and had been with the Company since 1967. He lived at 8 Frank Ave., Hicksville.

JOHN H. KEMPF of Product Release & Analysis, Plant 3, died April 7 at the age of 55. He had been with the Company 25 years and lived at 20 Cambridge St., Bethpage.

THOMAS L. MATHISON died April 7. He worked in Receiving Inspection, Plant 24, and lived at 53 Sugar Maple Rd., Levittown. His age was 54 and he had been with the Company 11 years.

DANIEL F. SALVINO of Power Plant Design, Plant 35, died April 7 at the age of 42. He had been with Grumman since 1961, and he lived at 14 Highfield Dr., Dix Hills.

For Sale

HOUSE: Selden, 4 bdrm. col. splanch, ctr. hall., din. rm., lrg. eat-in-kit., 1½ bath, cath. ceil. liv. rm., panel, fam. rm., 2 car gar., fenc., s-s,xtras, 3 yr., $30,990. 732-1107.

HOUSE: Hicksville area, 7 rm. split, 1½ bath, 3 bdrm., playrm. att., gar., bsmt., w-w, air cond., oil heat, all appli., 75x100, 24 ft. above grnd. pool, $39,500. WE 5-9614.

HOUSE: Massapequa, mother/daugh. cust. ranch, 3 bdrm. up w/wood burn. brick firepl., 2 add. bdrm. down w/sep. ent., bath, & kit., avail. for rent., all brick, 100x100, fully landscpd., tool shed, take over 6% mtge., $36,000. 799-8788.

HOUSE: Freeport, 3 bdrm. hi-ranch, 2½ bath, den, Fla. rm., gar., on canal waterfront. 223-0156.

HOUSE: N. Brentwood, nr. LIE, 7 rm. ranch, 3 bdrm., sunken den, din. rm., fully carpet., full bsmt., s-s, patio, 16x32 in-grnd. pool, tool shed, 1½ car gar., 75x125 fully lndscpd., fenc., xtras, ask. $31,990. 273-3654.

HOUSE: Levittown, 3 bdrm. cape, new kit. & bath, util. rm., beam ceil., fully carpet. s-s, 1½ car gar., fenc., treed yd., cov. patio, lndscpd. low tax., $29,900. 796-8288.

HOUSE: Strathmore at Stony Brook, S sect., 2 story Framingham, 4 bdrm., liv. rm. w/firepl., den, fam. rm., lndry., din. rm., 2½ car. gar., cent. air cond., ½ acre lndscpd plot, undergrnd. sprink. 751-4943, after 5 p.m.

HOUSE: Pt. Jeff. Sta., 4 bdrm., split, panel. den w/firepl., w-w, appli., fenc., s-s, gar., dead end st., $27,500. 473-3553.

HOUSE: East Meadow area, 5 bdrm., den, liv. rm., eat-in-kit., 2 bath, fin. bsmt. & bar, cent. air cond., alum. sid., 2 sep. gar., fully lndscpd., low tax., nr sch., $45,000. 334-5399.

BOAT: 26 ft. Ulrichsen Sport Fish., flybridge, '66, 310 hp Chrysler f.w.c., outrig., 100w S/S radio, teak cockpit, xtras, $2,500. JU 8-7185.

BOAT: '70 West Wind, 18 ft., 60 hp Johnson outbd., used 40 hrs., trlr., xtras. WE 8-1580.

BOAT: 15 ft. Thompson, $100; 18 hp Evinrude outbd. Fastwin, $50. JU 4-9528.

BOAT: 18 ft. fbgl., cov., ctrls., instr., 60 hp Johnson, trlr., 100 lb. moor. equip., dinghy, xtras, $1,200. OV 1-3641, after 5 p.m.

BOAT: '60 Ulrichsen Sport Fish., 25 ft., flybridge, pole hold., fish well, cush., hd., 125 hp Chrysler Crown, 3 yr., low hrs., $2,400. 587-3877.

BOAT: 20 ft. '61 Cruisers Inc. lapstrake, '65 rebit. eng. & out'drive, all new canvas, winter cov., xtra eng. parts, xtras, $1,300. AN 9-6179.

BOAT: '58 Chris Craft outbd., 15 ft. all mahog., fbgl. btm., '60, 18 hp Evinrude Fastwin, low run. hrs., '64 Mastercraft trlr., remote cont. & steer., run. lgts., anchor, canv. cov., $325. MY 1-5948.

CAB. CRUISER: '66, 17 ft. wod., 50 hp '63 Evinrude,use some work, new tilt trlr., $350. 433-4710, after 6:30 p.m.

BOAT: '70 Wellcraft, 17 ft. fbgl., '66, 60 hp Evinrude, elec. start., Holsclaw trlr., equip., $1,500. HA 7-1876.

BOAT: 24 ft. Owens, '59 rebit. eng., 225 hp, 60 hrs., hd., galley, xtras, $2,500. CH 9-3294.

DODGE: '71 Demon, 8,000 mi., 6 cyl., grn., orig. owner, $1,900. 433-6108.

MUSTANG: '66, 3-spd. Hurst Syncro w/alarm, air shocks, 2 xtra wide tires, xtra parts, $800. OV 1-8695.

CHEVROLET: '70 Impala cust., 2-dr. sed., 350, auto., R&H, snows. OR 1-1417, after 6 p.m.

MUSTANG: '69 Mach I, 428 c.i., Ram-air, 4-spd., pwr. steer. & discs, AM/FM stereo, 26,000 orig. mi., remain. of 5 yr. warr., $1,895. CH 9-0916, after 5 p.m.

CADILLAC: '65 conv., drk. blue w/wh. tp. & int., fact. air cond., new bks., batt., & exh., $750. 261-6825, after 6 p.m.

VW: '68 Beetle, tan, xtras, $1,245. 731-4609.

STA. WAG.: '64 Mercury, 8 cyl., 6 pass., pwr. steer. & bks., $400 or best offfer. OR 1-2824.

PLYMOUTH: '65 Fury III conv., R&H, pwr. steer. & bks., $650. 581-0608.

PONTIAC: '68 LeMans, 2-dr. spt. coupe., V-8, pwr. steer. & bks., vinyl tp., 31,000 mi., $1,575. 694-7283, after 7:30.

CORVAIR: '64, 2-dr., 46,000 mi., orig. owner, new muff. & bks., $165. PY 9-5002, after 6.

DART: '71, 4-dr. sed., 7,200 mi., 225 c.i., 6 cyl., pwr. steer., auto., radio, warr. thru 6/72, ask. $2,249. Linnea Langebartel, Ext. 2874.

PONTIAC: '68 Catalina, 6 pass. wag., pwr. steer. & bks., air cond., lug. rack, new tires & bks., ask. $1,300. 433-4271.

For Sale

VW: '70 bus, comp. eng. o'haul. 3/72, valves, clutch, etc., new tires & muff., $2,175. 273-2539.

CHEVROLET: '68 gold Impala, V-8, auto., pwr. steer., radio, vinyl int., 2 snows, adj. superlift shocks, 62,000 mi., trlr. hitch, $1,200; 7 pc. chrome tbl., 6 chrs., xtra leaf, $20; pr. Chinese figure. lamps, import., $40; elec. mangle ironer, $15. 878-0978.

HOUSE: Stony Brook, 3 bdrm., 2 bath, firepl., eat-in-kit., scrn. porch, 2 car gar., full bsmt., lndscpd., in 40s. 751-7870.

HOUSE: Dix Hills area, sch. dist. 5, 4 bdrm. hi-ranch, blt-in pool, lrg. rec. rm. w/brick firepl., undergrnd. lawn sprink., all appli., prof. lndscpd., xtras, $47,000. 667-9073.

HOUSE: Pennsylvania, heart of Dutch Country. 5 rm., bath, oil heat, gar., walk to stores, churches, 200 mi. NYC, low tax., immed. occup., $7,000. JU 4-6090.

HOUSE: Islip, 4 bdrm. hi-ranch, din. rm., rec. rm. w/full wall firepl., eat-in-kit., patio w/brick wall, 2 car gar., 1½ bath, w-w, s-s, dish., $35,000. 277-3768.

HOUSE: 3 bdrm. Levitt ranch, o'sz. gar., $28,500. 734-7344.

BUNGALOW: Mod. 5 rm., fully furn., 4 acres, adj. to state prop., new plumb., heat., oil burn., elec. wiring & roof, N.W. Catskill area, 7 mi. town, $5,000 cash. 293-5403.

PROPERTY: 2 acres nr. Albuquerque, N.M., reason. 724-0171.

PROPERTY: Mohican Lake, N.Y. area, 100x100, 15 mi. S. Monticello, approx. 4 blks. lake, $950. 732-5954, after 6 p.m.

HOUSE: N. Babylon, 5 bdrm. split, den, cov. patio, 24x4 pool, w-w, fenc., $39,500. 667-0981.

MISC.: N. Seaford, mother/daugh., wideline hi-ranch, 60x120, fenc., $42,500; 7 pc. mod. formica dinette w/hutch & server, $200; antique A.C. radio, $30; Deming deep-well, $30; ham radio sta., fix., $100, mobile, $75. 796-6017.

MG: Midget Mark III sport, 37,000 mi., wire whls., radio, tonneau cov., new front disc bks., 4 new radial Michelin tires, 2 used xtras, $900. Jon Holmes, Ext. 2741.

CUTLASS: '70, air cond., vinyl roof, 21,000 mi., ask. $2,375. 261-1186.

KARMANN GHIA: '69 coupe, wal. access., $1,500. 728-1930.

PONTIAC: '67 GTO, wh./blk. vinyl tp., w/w, pwr. steer. & bks., stick shift plus auto., xtra whls., orig. owner, ask. $1,350. 751-3052, after 6 p.m.

T-BIRD: '62, all pwr., $450. G. Rabkin, Ext. 1837.

RIMS: Rambler Amer., $10/pr.; 14 in. Ford rims, $10/pr. MY 1-5948.

HONDA: '71, CB-350-K3, 2,600 mi., elec. start, gold, helmet. 541-9449, after 6 p.m.

TRLR. HITCH: & hardware for '68 Chevy sta. wag., $10. PE 1-9115.

KAWASAKI: '71, 350cc, st. bike, windshld., direct., safety bars, lug. rack, sissy bk., air horns, $825; full rac. helmet, never used, $30. 265-6606.

TENT TRLR.: Travel mate, hdtp., slps. 8, dbl. dinette, sink, stove, icebox. 234-9632.

MISC.: '65 Chevy, Chevelle & Chevy II shop manual, '65, 1098cc Sprite/Midget eng., ported, incl. clutch, $130; gl. tp. dress. tbl. w/skirts, $10; radio ctrl. mod. car, '65 Olds, $10. PY 8-4258.

TBLS.: Lamp & corner, dbl. tier limed oak cocktail, artist's pallet shape, $75 for 3. 735-4231.

BDRM. SET: Wh., twin bd., canopy, dress., ngt. tbl. 543-0893.

FURN.: Match. dress. & mirror dress., 6 ft., 9 dwrs., maple contemp. design, $50. 585-6547.

BDRM. FURN.: Wh. Ital. prov., formica tp., twin bds., dbl. dress., sgl. dress., corner desk, bkcase, nite tbl., mirror, $200. WE 5-9675.

BDRM. SET: Col., maple, dbl. dress., ngt. tbl., full sz. hdbd. & frame, mirror & box spr., $100. 864-3281.

CASTRO CONV.: Dbl. sofa bd., gold uphol., $85. 751-0029, after 6 p.m.

LIV. RM. FURN.: Contemp., couch & match. chr., 2 club chrs., $150; set of 4 wal. tbls., $100. 587-4420.

RANGE: 40 in. G.E., wh. w/stainless steel hood, splatter shld., $110. 785-5331.

MISC.: Sears Kenmore wash. & dry.; kit. ext. tbl. w/4 chrs., reason. TU 8-8753, afternoons.

STOVE: 30 in. elec., stainless steel, 5 yr., best offer. 826-5357.

COLOR TV: 25 in. Quairsar cons., drk. wood Drexel cab., $325. 589-3625, after 5 p.m.

TV: 23 in. G.E. cons., B&W, best offer. 277-1342, evgs.

For Sale

MISC.: RCA TV cons., $50; 24 in. girl's bike, $20; 1 pr. red maple chrs., $25/pr.; 1 lgt. maple chr., $10. 744-3365.

SAILBOAT: 14 ft. Bluejay, rac. fin., spinnaker, trlr., moor. cov., rdy. to go, $850. Ed Thomas, Ext. 9066.

BOAT: 16 ft. Barbour, lapstrake, 40 hp Evinrude, elec. ctr. cons., controls, etc., $350. TU 4-8945.

BOAT: '64 Centry Ski Dart, 17 ft., 185 hp inbd., cush., ropes & trlr., $1,600. MO 1-4587.

PENNANT SLOOP: 18 ft., cuddy cab., dacron sails, stainless steel rig., 7½ hp Evinrude outbd., 75 mushrm. anchor, $650. 676-5484.

CROSBY: 17 ft., fbgl. runabout, 50 hp elec. start. Merc., Dilly tilt trlr., fully equip., xtras, $900. 691-1978.

MOTOR: '66 Evinrude outbd., 40 hp, elec. start., ctrls. & gas tanks incl., $250. FR 9-3372, after 3:30 p.m.

BOAT: 20 ft. Trojan, 2 bunk, inbd. cruiser, 48 hp Herc, full canv., shelter tp., new tanks, bilge pump, winter cov., galley, 2 anchors, $950. JU 8-3248.

MARINE ENG. PARTS: Auto. blks. for Chrysler Crown & Ace eng., $85/ea.; comp. blk. assem. w/pistons for 177 hp Chrysler, new, $150; 4 cyl. 40 hp mod. B Ford marine (fresh water only), $75; Barr marine reverse gear, fits most V-8 auto. engs. up to 350 c.i., $185; Chrysler Crown mod M7 or M47 water cool. manifold, $65; ½ in. & 1 in. Jabsco water pump, new, $20, $40. MO 9-0690.

WGT. SET: Sears Jr., incl. 2 dumbell bars, 4 wgts., 2.5 lbs., 2, 5 lb. wgts. & bar., $10. 731-2503.

FALL: 100% human hair, brunette, case, $40. 931-4281.

MINK STOLE: 14, fully let-out skins, pockets, $100. 368-2915.

MISC.: 6 ft. snow plow & frame only, $125; Toro pwr. handle w/2 in. reel mower edger/trimmer, 20 in. snow blower, $325; auto. Frieden calculator, $225. 669-2691, after 5 p.m.

LAWNMOWER: 21 in. Toro reel type, grass catch. incl., $50. 543-0893.

MISC.: Hasselblad 1000F, f2.8 Tessar, $230; 400mm, f5.6 Kilfitt telephoto, $170; 25 in. Magnavox color TV, stereo phono cons., remote ctrl., AM/FM stereo, 6 mo., $850. 266-2856.

REEL MOWER: 21 in. Pennsylvania w/3 hp Briggs & Stratton eng., $20. 598-1525.

CONS. HUMIDIFIER: Sears, $44. 643-7588.

SEA SHELLS: 3 massive Philippine Sea, for fountain, graded 3½ ft., 3 ft., & 2 ft. dia., 275 lbs. wgt., $300. 541-8709, after 5 p.m.

GOLD. RETRIEVER: Fem., spay., AKC papers, 11 mo., $125. 751-1559.

MOBILE HOME: '69 Hill Crest, 60x12, comp. w/ wash. & dry., panel. & carpet., shed, ask. $13,500. Jim Reynolds, Ext. 57-354.

WHL. CAMPER: '70 hdtp., slps. 8 dbl. dinette, 3 way refrig., 2 gas tanks, stove, sink, canopy hitch, $1,350. 289-1505.

CAMPER: '67 Apache Falcon, slps. 4 or 54 in. foam matt., canopy, poles, lines, stakes, spare tire, 10,000 BTU heat. w/20# propane tank & line, remov. stor./seats, $600. 938-0969.

CAMPER CAP: For pickup truck, 8 ft. box, fully insul., panel., lgts. in & out, full rear dr., 2 bunks, $200. IV 1-3405.

plane
GRUMMAN
news

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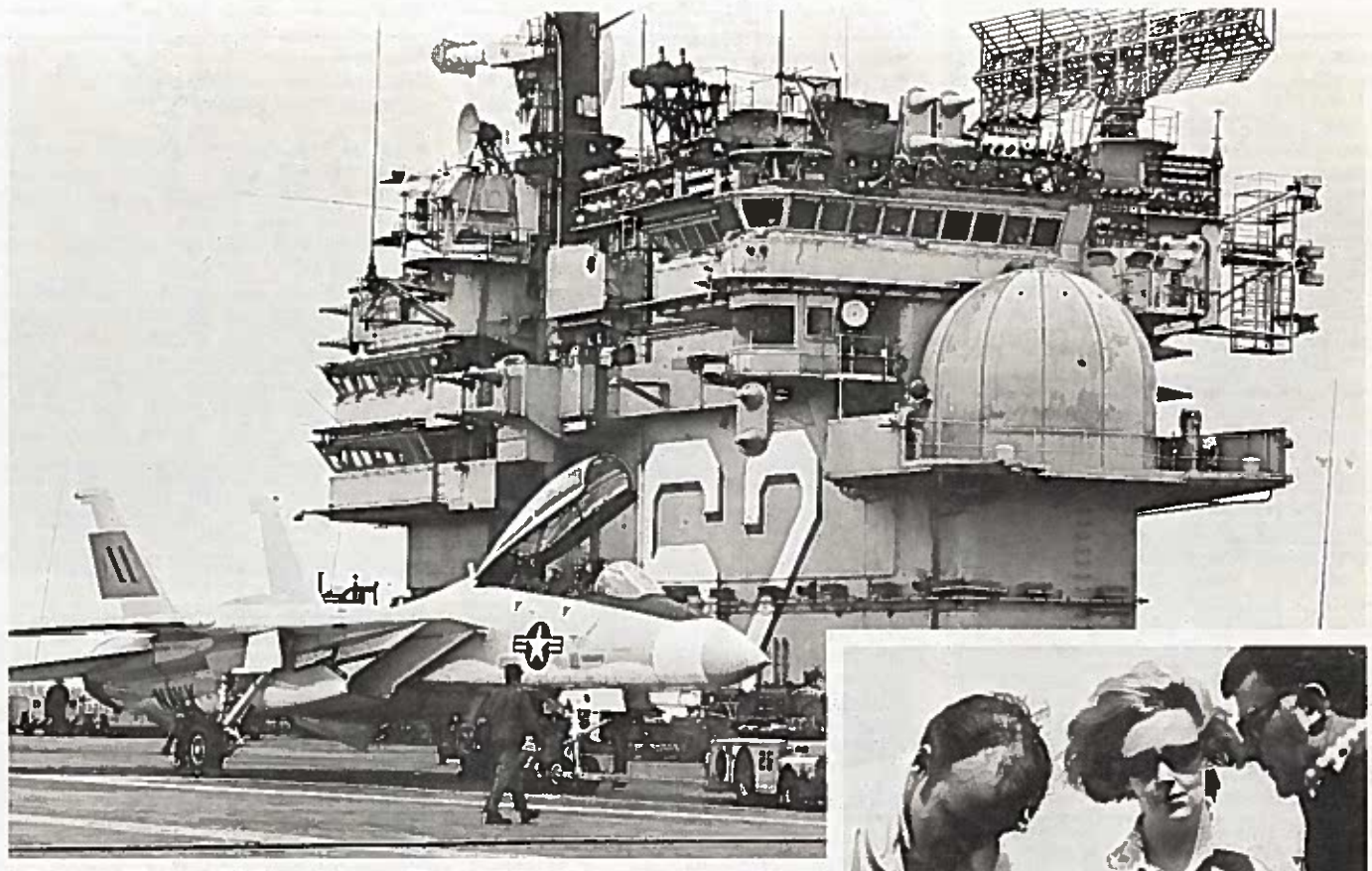
Tomcat aboard Indepedence for carrier handling trials



Participating in a preliminary shipboard evaluation of the F-14's handling characteristics aboard the carrier Independence were (L to R) 'Tank' Sherman, Joan Willing, and Duke Digilio. (Photos by Dick Sander)

It wasn't too long ago that Tomcat No. 11 made two special trips.

One was a flight to Oceana, where it got TV coverage. The idea—which went over extremely well—was to let the aircraft fighter community get a look at the Navy's newest air superiority plane. It was more than a static display as Grumman Pilot Hal Farley and Missile Control Officer Bill "Tank" Sherman made a couple of sweeps of the area.

Of more consequence as a milestone in the plane's growth was its visit to Norfolk, Va. There the aircraft was hoisted aboard the aircraft carrier USS Independence. "The primary purpose of these trials," said the Navy, "is to conduct a preliminary evaluation of the shipboard handling characteristics of the F-14A aircraft."

Lt. Cdr. Rick Hauck, the test coordinator, and Lt. Cdr. Em Brown and the Navy wanted to see "how it fit" aboard ship, so No. 11 went through some exercises — being power-taxied and towed around, going through flight and hangar deck handling, riding the elevator below deck and up again, and so on.

It was never out of sight photographically, Dick Sander shooting stills and Bruce Montgomery taking movies for Presentations Services, with George Steinhoff covering the event for Aerolog.

When the day was over, Commander Hauck noted that "Notwithstanding minor problems which are generally encountered on preliminary tests such as these, shipboard personnel were generally pleased with the maneuverability and deck handling capabilities of the Tomcat. The cooperation and professionalism of Grumman personnel was superb."

That last comment was a warm kudo for the Grumman team, which included Joe Hannan, deputy director of the Flight Acceptance Department; Duke Digilio, Flight Test liaison coordinator; Joan Willing, Flight Test coordinator; Plane Captain Sal Perrone; and Bill Lent, Bob Leihr, Roy Duryea, Pete Howell, and Jim Lynch.

Off the carrier at Norfolk the following day, Farley and Sherman took Tomcat No. 11 on a non-stop flight (by refueling over Dallas, Texas) to Point Mugu, Calif.

On April 6, Tomcat No. 10 flew into the Navy Air Test Center at Patuxent River, Md., to begin some 10 months of carrier suitability demonstrations.

The swept-win fan-jet air superiority fighter faces catapult launches, automatic carrier landing system checks, and arrested landings. In the cockpit will be Grumman Flght Test Pilot Charlie Brown. Actually, the tests culminate in formal BIS (Board of Inspection and Survey) service acceptance trials, which are scheduled early next year.

Initial tests, reports Tester (the "Voice of the Navy" in Southern Maryland), " . . . will include airspeed system calibrations and weight and balance determination. . . . "

Sendoff to Cape. Vice President Ralph Tripp (L), director of the LM Program, met with Sal Attard of LM Support Equipment, Tom Reilly of LM Subcontracts, and John Albanese of LM Structural Analysis before they left for KSC. They will be guests of Grumman and NASA at Apollo 16 launch for their contributions to LM Program. (Photo by Bob Settles)

Unveil train of the future . . .

(Continued from page 1)

electric linear induction motor (LIM) built by the Garrett Corporation. For the research vehicle, however, three General Electric JT 15D-1 jet engines are being used initially to provide both levitation air and sufficient residual thrust for speeds of more than 100 mph. Later operational vehicles are to use electrically driven air-supply fans.

Sophisticated suspension

The tracks is made of poured concrete and was designed for Grumman by Sverdrup & Parcel. It incorporates various degrees of roughness. This will test the sophisticated TACRV suspension system. (The more sophisticated the TACRV suspension, the rougher can be the guideway on which the vehicle runs.)

Guideway maintenance costs are said to be much less than for conventional train railbeds, where wear is constant. Since the vehicle is riding on a layer of air it has no contact with the guideway and therefore no wear results.

Power for the LIM is to be supplied from a wayside power "third rail." The turbo fans will power the lifting air cushions beneath the vehicle, as well as the guidance cushions on each side.

Grumman designed the TACRV under a $3 million contract and built it in Plant 4 under an additional $3.5 million contract. Bob Benito is Program director and Greg Grubelich the Program manager. Frank Massoni has been foreman of construction.

Remember the date!

Don't forget Tuesday, April 25. That's the date established to honor all secretaries during National Secretary Week. So set it aside—and don't forget to say thanks for the rest of the year.